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HEPATIC STEATOSIS IS INDEPENDENTLY ASSOCIATED WITH HYPERREACTIVE BLOOD PRESSURE RESPONSE ON THE EXERCISE STRESS TEST

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Authors: *Antonio Laurinavicius, Fernando Nary, Michael Blaha, Khurram Nasir, Raquel Conceicao, Jose A. Carvalho, Roger Blumenthal, Raul Santos, Preventive Medicine Center Albert Einstein Hospital and InCor HCFMUSP, Sao Paulo, Brazil, Ciccarone Preventive Cardiology Center Johns Hopkins School of Medicine, Baltimore, MD, USA*

Background: Hepatic steatosis (HS) is associated with insulin resistance, the metabolic syndrome, subclinical inflammation and a higher risk of cardiovascular disease. Blood pressure hyperreactivity during peak exercise is associated with an increased risk of developing hypertension and with increased cardiovascular risk. Clinical predictors of hyperreactive response (HRR) are not well established. We studied the association between hepatic steatosis (HS) and HRR.

Methods: We evaluated 7995 consecutive non-hypertensive individuals (mean age: 41.7 years, 24.9% female) who underwent symptom limited exercise stress test, abdominal ultrasonography and extensive clinical and laboratory evaluation as part of a check-up protocol between 2006 and 2009. HS was detected by abdominal ultrasonography. HRR was defined by a systolic blood pressure higher than 220 mmHg and / or elevation of 15 mmHg or more in diastolic blood pressure. The association between HS and HRR was tested by multiple logistic regression.

Results: The prevalence of HS was 28.4% (n=2270). Overall, 7% (n=559) of the study population presented HRR. Subjects with HS showed a higher prevalence of HRR than those without HS (12.7% vs. 4.7%, OR 2.14, 95% CI 1.78 to 2.56, p <0.001). Other variables associated with HRR were: Body Mass Index (BMI)> 25 kg/m2 (OR 2.49, 95% CI 2.01 to 3.08, p <0.001); fasting glucose > 100 mg/dL (OR 1.69, CI 95% 1.34 to 2.14, p <0.001); C-reactive protein> 2 mg / L (OR 1.40, 95% CI 1.15 to 1.70, p = 0.001); and low HDL-cholesterol levels (OR 1.22, 95% CI 1.02 to 1.46, p = 0.034). After adjustment for these variables as well as baseline blood pressure, only HS (OR 1.37, 95% CI 1.12 to 1.67, p = 0.002) and BMI> 25 kg/m2 (OR 1.41 95% CI 1.12 to 1.67, p = 0.002) remained statistically significant predictors of HRR.

Conclusions: HS is an independent predictor of HRR. This association may partially explain the increased cardiovascular risk observed in HS.